

REMARKS

Claims 1-28 are pending in the application and all of the claims have been rejected. In addition, claims 27-28 have been objected to. Claims 6-7, 9, 12, 19, 22, 24 and 28 have been canceled. Claims 1-5, 8, 10-11, 13-18, 20-21, 23 and 25-27 remain in the application. Applicants respectfully traverse the rejections of claims 1-5, 8, 10-11, 13-18, 20-21, 23 and 25-27 and seek favorable reconsideration in view of the following remarks.

Applicants note that this Non-Final Rejection supersedes the prior Non-Final Rejection dated 08/22/2008. Accordingly, the 3 months shortened statutory period began upon the 09/25/2008 mailing date of this Action.

The Examiner objected to claims 27-28 as being misnumbered. Under 37 C.F.R. § 1.126 “the original numbering of the claims must be preserved throughout the prosecution” of the patent application. Claims 27 and 28 were misnumbered as claims 26 and 27, respectively. Applicants have renumbered claim 27 appropriately and canceled claim 28. Accordingly, Applicants respectfully request withdrawal of the objection to claim 27.

The Examiner rejected claims 1-5, 18, 21 and 25-27 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,284,022 B1 (“Sachweh et al.”). Independent claim 1 has been amended to include the elements of dependent claims 6 and 7. Accordingly, the rejection under § 102(b) of independent claim 1 and claims 2-5 and 25-27 which depend from independent claim 1 has been obviated. Thus, Applicants respectfully request withdrawal of the rejection of claims 1-5 and 25-27 as being anticipated by Sachweh et al.

The Examiner also rejected independent claim 18 as being anticipated by Sachweh et al. Independent claim 18 has been amended to include the elements of dependent claim 19. Accordingly, the rejection under § 102(b) of independent claim 18 and dependent claim 21 has been obviated. Thus, Applicants respectfully request withdrawal of the rejection of claims 18 and 21 as being anticipated by Sachweh et al.

The Examiner rejected dependent claims 6-7 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Sachweh et al. As discussed above, independent claim 1 has been amended to include the elements of dependent claims 6 and 7. In addition, independent claim 18 has been amended to include the elements of dependent claim 19. Claims 2-5, 8, 10, 23 and 25-27 depend from amended independent claim 1 and claims 20-21 depend from amended independent claim

18. For the following reasons Applicants respectfully submit that claims 1-5, 8, 10, 18, 20-21, 23 and 25-27 are not rendered obvious by Sachweh et al.

Amended independent claim 1 claims “A method of scrubbing a halogen-containing gas stream, comprising: contacting the gas stream with water at a temperature of at least 30°C; and further contacting the gas stream with water at a temperature of less than 30°C.” The Examiner asserts that Sachweh et al. disclose the step of “further contacting the gas stream with water at a temperature of less than 30°C” as claimed in amended independent claim 1. The Examiner seems to reason that in view of Sachweh et al.’s disclosure that the temperature of the scrubbing water is 10 to 15°C below the temperature of the gas stream (up to 100°C) and the scrubbing water temperature is preferably 2 to 50°C, “...it would be obvious to have [a] second scrubber with water temperature less than 30°C together because duplication in parts renders obvious.” (citing *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)). Applicants respectfully disagree with the Examiner’s rejection and the application of *In re Harza*.

The claims at issue in *In re Harza* were directed to an apparatus. 274 F.2d 669, 124 USPQ 378 (CCPA 1960). The Court held that independent claim 1 was rendered obvious in view of U.S. Patent No. 2,228,052 (“Gardner”) because “[t]he only distinction to be found is in the recitation in claim 1 of a plurality of ribs on each side of the web whereas Gardner shows only a single rib on each side of the web.” *In re Harza* at ¶ 16. In contrast, Applicants’ amended independent claim 1 is directed to a method. Applicants respectfully submit that *In re Harza* fails to provide any guidance regarding its application to method claims and the test “duplication of *parts*” clearly applies to apparatus. The addition of a second, distinct method *step* is not a mere duplication of *parts* as suggested by the Examiner. Accordingly, Applicants respectfully request withdrawal of the rejection to amended independent claim 1 which includes the elements of canceled dependent claims 6 and 7.

Moreover, Applicants respectfully submit that Sachweh et al. fail to teach or even suggest two method steps: 1) “contacting the gas stream with water at a temperature of at least 30°C” and 2) “contacting the gas stream with water at a temperature of less than 30°C” as claimed in amended independent claim 1. As stated by the Examiner, Sachweh et al. teach that the temperature of the scrubbing water is 10 to 15°C below the temperature of the gas stream (up to 100°C). Sachweh et al. further teach that “the scrubbing liquid is at a temperature of...2 to...50°C.” Sachweh et al. evidently teach and contemplate that for a given process, a single

source of scrubbing liquid at a *single* temperature is used. *See* FIG. 2. Sachweh et al. fail to teach or even suggest “contacting the gas stream with water at a temperature of at least 30°C; and...further...contacting the gas stream with water at a temperature of less than 30°C” as claimed in amended independent claim 1. Accordingly, Applicants respectfully submit that amended independent claim 1 is not rendered obvious by Sachweh et al. and for this further reason, respectfully request withdrawal of the rejection to amended independent claim 1.

Claims 2-5, 8, 10, 23 and 25-27 depend either directly or indirectly from amended independent claim 1. Thus, dependent claims 2-5, 8, 10, 23 and 25-27 are not rendered obvious by Sachweh et al. for at least the reasons set forth above with respect to independent claim 1.

The Examiner rejected dependent claim 19 which has been combined with independent claim 18. Amended independent claim 18 claims “[a]n apparatus for scrubbing a halogen from a gas stream, comprising: a hot wash scrubbing chamber..., a water supply device for supplying to said hot wash scrubbing chamber water at a temperature of at least 30°C, a source of a halogen-containing gas for supplying to said hot wash scrubbing chamber a gas stream containing the halogen...; and a cold wash scrubbing chamber downstream of said hot wash scrubbing chamber, a cold water supply device for supplying to said cold wash scrubbing chamber water at a temperature of less than 30°C, a communication pathway for transport of the treated gas from the outlet of the hot wash chamber into the cold wash chamber...”

The Examiner asserts that Sachweh et al. “disclose the Figure 2 showing a scrubber column, a vapor-saturated gas stream enters at the bottom end of column and cold scrubber liquid is fed to the top end of the column, an outlet at bottom of the scrubber column (not numbered) which read on the limitations of instant claim.” In addition, the Examiner asserts that “it would contain a source of halogen-containing gas, a water supply device in order to supply to the scrubber[,]” but “the intended use is not considered as [a] limitation” in independent claim 18. Regarding dependent claim 19, the Examiner asserts that Sachweh et al. teach “a communication pathway for transport of the treated gas from the outlet of hot wash chamber into the old wash chamber, and an outlet for treated gas from cold wash chamber” as claimed. The Examiner reasons that “Sachweh et al...disclose the segments in scrubber column in Figure 2, which *would have* a communication pathway between hot and cold scrubbing *if* 2nd cold stage of scrubbing is installed.” (emphasis added). The Examiner further states that “[a]s illustrated in Figure 2, there is an outlet for treated gas (not numbered).” Applicants respectfully disagree

with the Examiner's rejection and seek favorable reconsideration in view of the following remarks.

Sachweh et al. teach that "FIG. 2 shows the segmental calculation of the linked mass and heat transfer in a scrubber column (3)." Col. 26, lines 18-19. As stated by the Examiner, the gas stream enters the bottom of the column (2) while "cold scrubber liquid is fed to the top end of the column in countercurrent (1)." Col. 26, lines 19-22. Sachweh et al. teach that the "column is *theoretically* divided into segments." Col. 26, lines 22-23; FIG. 2. Thus, in contrast to the Examiner's implied assertion that Sachweh et al. teach a hot wash scrubbing *chamber* and a cold wash scrubbing *chamber* as claimed in amended independent claim 18, Sachweh et al. simply fail to teach or even suggest two such chambers. Indeed, Sachweh et al. teach, as shown in FIG. 2 and described in Col. 26, lines 22-40, a single column having an array of *theoretical* stages (not actual chambers) for which the partial pressures of the gas phase and condensable vapor can be determined. Sachweh et al. simply fail to teach or even suggest "a hot wash scrubbing chamber...and a cold wash scrubbing chamber downstream of said hot wash scrubbing chamber..." as claimed in amended independent claim 18.

Moreover, because Sachweh et al. fail to teach or even suggest the hot wash and cold wash scrubbing chambers, they necessarily fail to teach "a communication pathway for transport of the treated gas from the outlet of the hot wash chamber into the cold wash chamber..." as claimed in amended independent claim 18. FIG. 2 of Sachweh et al. simply fails to teach a communication pathway as suggested by the Examiner. Moreover, there is simply no teaching or suggestion in Sachweh et al. to include a communication pathway as claimed. The Examiner has provided no art that either teaches or suggests a hot wash chamber, a cold wash chamber and a communication pathway to transport gas from the hot wash chamber to the cold wash chamber as claimed in amended independent claim 18. Sachweh et al. simply fail to teach or even suggest "a communication pathway for transport of the treated gas from the outlet of the hot wash chamber into the cold wash chamber..." as claimed in amended independent claim 18.

In addition, Sachweh et al. also fail to teach or even suggest "a water supply device for supplying to said hot wash scrubbing chamber water at a temperature of at least 30°C; and...a cold water supply device for supplying to said cold wash scrubbing chamber water at a temperature of less than 30°C..." as further claimed in amended independent claim 18. As discussed above with respect to amended independent claim 1, Sachweh et al. teach that the

temperature of the scrubbing water is 10 to 15°C below the temperature of the gas stream (up to 100°C). Sachweh et al. further teach that “the scrubbing liquid is at a temperature of...2 to...50°C.” Sachweh et al. evidently teach and contemplate that for a given process, a single source of scrubbing liquid at a *single* temperature is used. See FIG. 2. Sachweh et al. fail to teach or even suggest “a water supply device for supplying to said hot wash scrubbing chamber water at a temperature of at least 30°C; and...a cold water supply device for supplying to said cold wash scrubbing chamber water at a temperature of less than 30°C...” as claimed in amended independent claim 18. Accordingly, Applicants respectfully submit that amended independent claim 18 is not rendered obvious by Sachweh et al. For all of the aforementioned reasons, Applicants respectfully request withdrawal of the rejection to amended independent claim 18.

Claims 20-21 and 28 depend from amended independent claim 18. Thus, Applicants respectfully submit that claims 20-21 and 28 are not rendered obvious by Sachweh et al. for at least the reasons set forth above with respect to amended independent claim 18. Accordingly, Applicants respectfully request withdrawal of the rejections to claims 20-21 and 28.

The Examiner rejected claims 8-17, 20, 22-24, 28 under 35 U.S.C. 103(a) as being unpatentable over Sachweh et al. in view of EP 1 023 932 A1 (“Smith et al.”). Applicants have canceled dependent claim 9, 12, 22, 24 and 28 and thus, the rejection of these claims has been obviated.

Regarding dependent claims 8 and 10, the Examiner concedes that “Sachweh et al. do not teach the further treatment step of diluting in a cyclone as claimed.” However, the Examiner asserts that Smith et al. “teach [a] gas purifying cyclone (Title).” The Examiner further asserts that “[t]he cleaning system comprises a cyclone for receiving the gas stream and separating the gas from the particles, where the cyclone processes means for the introduction of a diluent gas stream (Abstract).” The Examiner reasons that “[t]he advantage of using a diluent gas in [a] cyclone separator...is to reduce the concentration of pyrophoric gases in [a] noxious gas stream below their flammability limits ([0019])[,]” thus, “it would have been obvious...to add [a] cyclone with diluent gas taught by Smith et al. with the scrubbing tower in the method of Sachweh et al. in order to attain the advantages.” In addition, the Examiner asserts that “further purification of [the] product is obvious.” (citing MPEP §§ 2144.05.VII).

Claims 8 and 10 depend from amended independent claim 1. Thus, in view of the arguments set forth above with respect to amended independent claim 1, Applicants respectfully

submit that dependent claims 8 and 10 are not rendered obvious by Sachweh et al., either alone or in combination with Smith et al.

The Examiner rejected claim 23 as being obvious over Sachweh et al. in view of Smith et al. because Smith et al. teach “the diluent gas conveniently being air.” (citing ¶ [0040]). Claim 23 depends from amended independent claim 1. Thus, in view of the arguments set forth above with respect to amended independent claim 1, Applicants respectfully submit that dependent claim 23 is not rendered obvious by Sachweh et al., either alone or in combination with Smith et al.

The Examiner rejected independent claim 11 as being obvious over Sachweh et al. in view of Smith et al. The Examiner asserts that “Smith et al...disclose the gas outlet 35 in the form of a tube set in to an upper wall 36 of the cyclone body 31 and a particle outlet 37 at the base of the conical portion 33 allowing particles to exit the body 31 under gravitational force and be collected at bottom of the body ([0039]).”

Independent claim 11 has been amended to depend from amended independent claim 1. Thus, for at least the reasons set forth above with respect to amended independent claim 1, amended claim 11 is not rendered obvious by Sachweh et al. either alone or in combination with Smith et al.

The Examiner asserts that dependent claim 13 is rendered obvious by Smith et al. because “Smith et al...disclose the diluent gas conveniently being air ([0040]).” In addition, the Examiner asserts that dependent claim 14 is rendered obvious by Sachweh et al. because “Sachweh et al...disclose [a] gas stream being suitable in principle [for] all gas streams which have a carrier gas which is to be cleaned at the process temperature and which contains both gaseous and particulate contaminants which are to be removed (Col. 2, line 58-61).” The Examiner reasons that “[i]t would include the exhaust gas from semiconductor manufacture as claimed.” The Examiner asserts that dependent claim 15 is rendered obvious by Sachweh et al. (Col. 5, line 42-45). In addition, the Examiner asserts that “[a]s to [a] gas stream flowing in a generally upward direction and water being caused to flow in a generally downward direction in claim 16, the figure 2 of Sachweh et al...shows the features as claimed.” Furthermore, the Examiner asserts that dependent claim 17 is rendered obvious by Sachweh et al. (Col. 4, line 5).

Claims 13-17 depend indirectly from amended independent claim 1. Thus, in view of the arguments set forth above with respect to amended independent claim 1, Applicants respectfully submit that dependent claims 13-17 are not rendered obvious by Sachweh et al., either alone or in combination with Smith et al.

The Examiner asserts that dependent claim 20 is rendered obvious by Sachweh et al. in view of Smith et al. Regarding independent claim 18, the Examiner asserts that "Sachweh et al...Figure 2 show[s] a scrubber column, a vapor-saturated gas stream enter[ing] at the bottom end of column and [a] cold scrubber liquid...[feed] to the top end of the column, [and] an outlet at bottom of the scrubber column (not numbered)." The Examiner reasons that Figure 2 "read[s] on the limitations of...claim [18], and it would contain a source of halogen-containing gas, a water supply device in order to supply to the scrubber." The Examiner further reasons that the intended use of the apparatus of claim 18 is not considered as limitation.

Claim 20 depends from amended independent claim 18. Thus, Applicants respectfully submit that claim 20 is not rendered obvious by Sachweh et al. for at least the reasons set forth above with respect to amended independent claim 18. Accordingly, Applicants respectfully request withdrawal of the rejections to claim 20.

In conclusion, Applicants respectfully submit that amended independent claims 1 and 18 are not rendered obvious by Sachweh et al. either alone or in combination with Smith et al. for all of the reasons set forth above. In addition, claims 2-5, 8, 10-11, 13-17, 23 and 25-27, all of which depend from amended independent claim 1, and dependent claims 20-21 which depend from amended independent claim 18 are similarly not rendered obvious by Sachweh et al. either alone or in combination with Smith et al. Accordingly, Applicants respectfully request favorable reconsideration of claims 2-5, 8, 10-11, 13-17, 20-21, 23 and 25-27 and withdrawal of the rejections to these claims so that the application may be promptly passed to issue.

The Office Action contains numerous statements reflecting characterizations about the invention(s), the claims, and the related art with which Applicant does not necessarily agree. Regardless of whether any such statement or characterization is discussed above, Applicants declines to subscribe to any statement or characterization in the Office Action.

Applicant has enclosed a request for a three-month extension of time. Applicant does not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Respectfully Submitted,

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Date: March 25, 2009

CUSTOMER NO. 71134